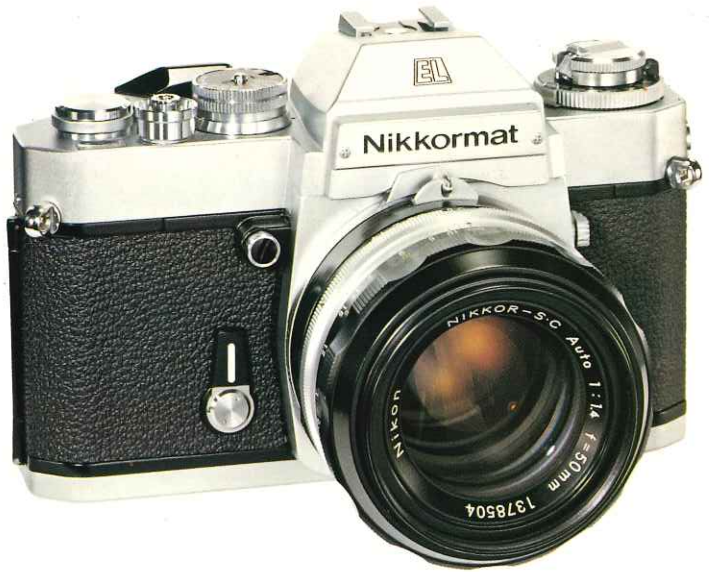
The Nikkormat EL

JERRY COOKE

Nikkormat EL

For those who seek the ultimate personal camera



A camera is your special window on the world. Through its viewfinder, your mind forms impressions that are uniquely yours. And, if the camera is the Nikkormat EL, it responds with photography that pictures what you see in your own, personal way.

You turn a dial, and the Nikkormat EL is a fully automatic camera that adjusts itself to give you perfectly exposed photographs with unfailing accuracy. It can do this because it is equipped with the most up-to-date, electronically-controlled shutter linked to the most reliable metering system for thru-the-lens exposure control.

In the Nikkormat EL, however, automation is your servant, not your master. You can override the automatic system whenever you wish and exercise personal control over exposure to suit your pictorial ideas. And the camera carries out your commands at the touch of your finger, with the same automatic accuracy.

The very design of the Nikkormat EL adds to your picture-taking confidence and speed. It is contoured to nestle comfortably in your hands, all controls conveniently under your fingers. And, because it is made by Nikon as part of the famous Nikon System, you know you can depend on your Nikkormat EL to give you the most reliable performance and magnificent picture quality in 35mm photography, today and for years to come.

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Nikkormat EL
and the Nikon System

Impressive as the built-in capabilities of the Nikkormat EL are, they are only the beginning. Because, this camera is designed to be part of the Nikon System through which it gives you access to every conceivable application of 35mm photography. A system whose continuously evolving growth assures an ever widening horizon for your own photographic involvement.

There are more than forty Nikkor lenses in the Nikon System—an array of photographic optics equally unique for world-renowned picture quality, innovating design and ingenious variety. The Nikkormat EL not only accepts them all but gives you automatic exposure control with every one of them.

In addition, the greatest variety of equipment for close-up photography in all 35mm is available to you. So are countless precision filters, lens hoods, finder attachments and special accessories. Finally, you have the widest possible choice of carrying cases to hold anything from the camera alone to a complete outfit in luxurious safety and ready for use.

All elements of this matchless system are linked by the Nikon principle of System Resolution. It means that any of them, when fitted to the Nikkormat EL, forms a unified instrument, a truly perfect unit that produces sharper and better pictures than any parts from outside the system.

Nikkormat EL
the camera

Few, if any, cameras have been welcomed with such unanimous enthusiasm by those most critical of experts, the photographic magazine writers, as the Nikkormat EL. To earn their praise, the EL had to prove its merit not only in terms of advanced design and quality construction but, above all, as a superbly practical and capable camera for photography in all its forms, from the everyday to the most sophisticated.

Among the many innovations offered by the Nikkormat EL, the most striking is its electronically-controlled shutter. It offers the highest obtainable speed accuracy at every setting and maintains perfect repeat accuracy every time any given speed is selected. Linked to the famous "center-weighted" meter system, it gives you precisely correct exposure automatically but also leaves you the choice of selecting your own exposure settings whenever you wish. And, because the speed adjustment is continuous through the entire range from 4 seconds to 1/1000th, you never have to settle for an "almost-right" exposure.

The "center-weighted" meter system, designed by Nikon, has proved to be the most consistently reliable technique for thru-the-lens exposure control. Its ability to base your exposure on the main subject is a special advantage for the Nikkormat EL user because you are always sure that the camera's automatic response is based on the most important part of the picture. (In other systems, which depend on the photographer to make compensating adjustments, automatic operation may actually make correct exposure less certain.)
And, to assure the greatest possible exposure accuracy, Nikon even designed the electronic components that govern the shutter speeds and link it with the meter system.

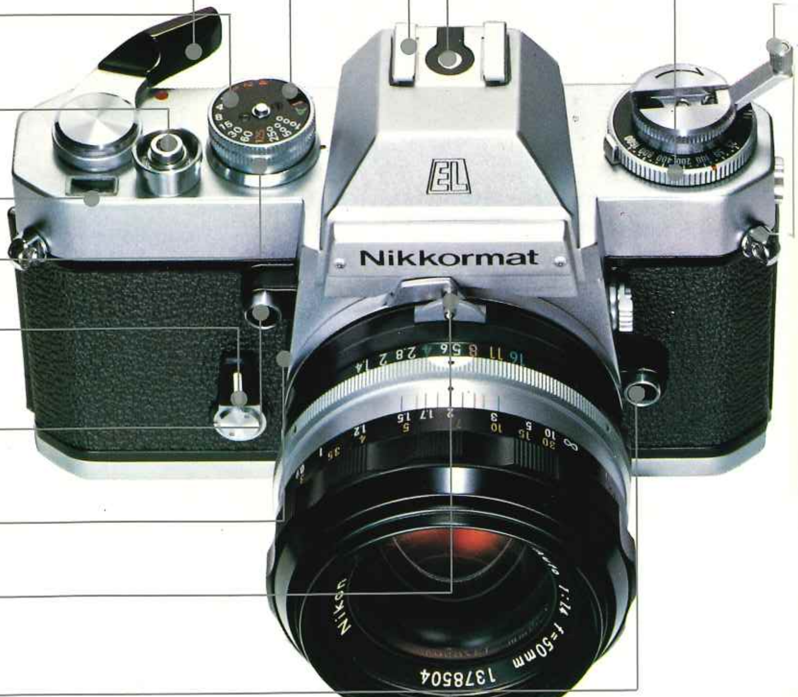
Looking into the Nikkormat EL viewfinder, you are greeted by a spectacularly bright preview of your picture, accurately framed by the single-lens reflex system. You not only enjoy error-free, thru-the-lens viewing and focusing but also check your exposure through the finder. You can squeeze off shot after shot, through an entire roll of film, without taking your eye off the finder to check any settings, so there's never any risk of missing that once-in-a-lifetime picture.

Some of the Nikkormat EL features are less evident but no less important. The back, for example, embodies a special film-flattening system similar to that used in the famous Nikon F2. It is vital that the film be kept absolutely flat; otherwise, the finest of lenses cannot produce a picture that is truly sharp all over. The mirror is extra large so that it does not cut off any part of the finder image, even when a 1000mm lens is used. The neckstrap eyelets are reinforced with stainless steel inserts for extra durability.

You will quickly discover that the Nikkormat EL is also very much a human-oriented camera. Its shape and weight, the contours and locations of its controls—many of them plastic-cushioned for comfortable operation—endow it with a completely natural "feel" and swift, positive responsiveness. Everything works with a quiet smoothness that can only be achieved by applying the most meticulous precision standards to even the smallest details. In short, it is everything you expect of a camera made by Nikon.

• SAFETY FEATURES

The Nikkormat EL abounds in special safety features designed to make sure, unobtrusively, that the camera does only what you want it to do. They protect the shutter release against unwanted tripping (a), the back against accidental opening (b), the shutter speed dial (c) and ASA selector (d) against unintentional resetting.



Synch selection indicator

Multi-function advance lever

Shutter speed dial
Calibrated for speeds from 4 seconds to 1/1000th and B, plus "A" (automatic setting).

Shutter release button
Threaded for tapered cable release. Guard ring accepts Nikon cable release.

Auto-reset frame counter
Indicates the number of frames exposed.

Synch selector ring

Self-timer
Releases shutter after 10-second delay. Lever also serves as exposure memory lock.

Depth-of-field preview button
Stops lens diaphragm down to "shooting" aperture without making an exposure.

Maximum aperture indicator
Provides visual check of automatic lens/meter coupling.

Meter coupling pin
Engages with coupling prong on lens for full-aperture exposure metering.

Lens release button

Accessory shoe
Accepts flash units and other accessories with standard shoe mounts.

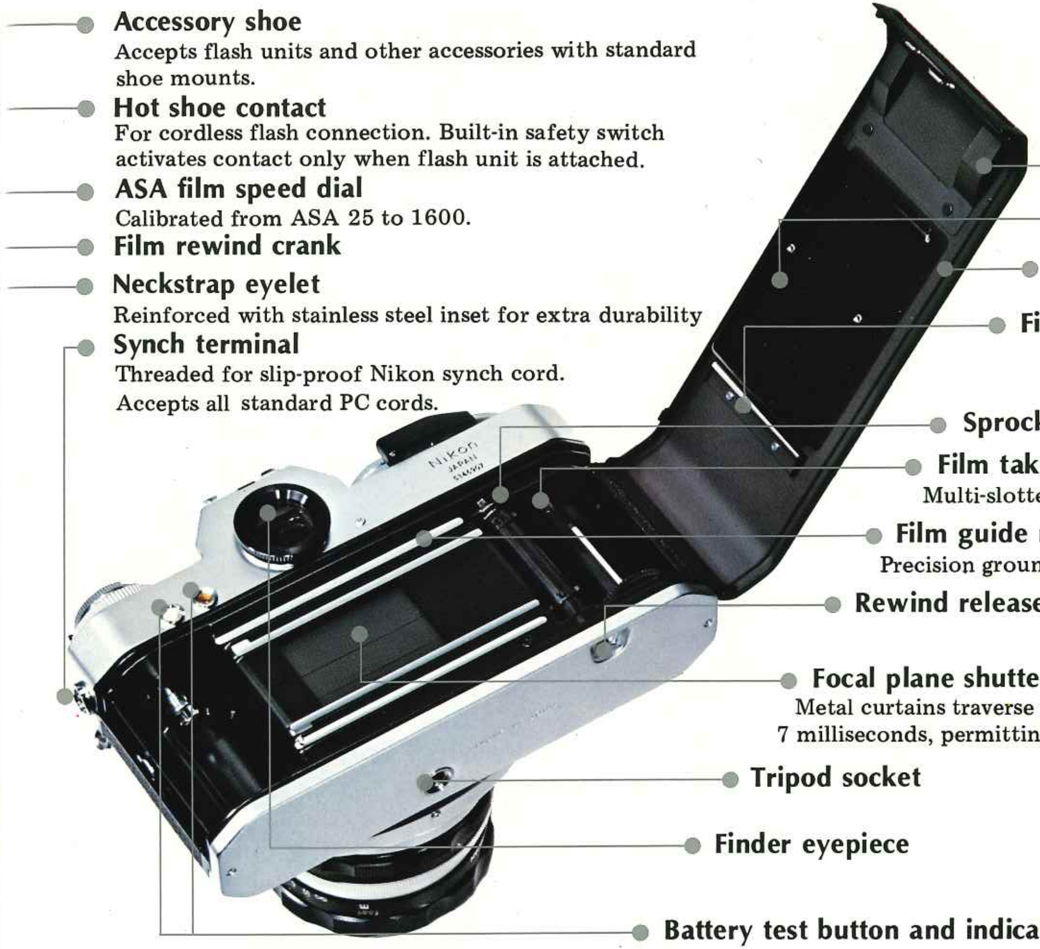
Hot shoe contact
For cordless flash connection. Built-in safety switch activates contact only when flash unit is attached.

ASA film speed dial
Calibrated from ASA 25 to 1600.

Film rewind crank

Neckstrap eyelet
Reinforced with stainless steel inset for extra durability

Synch terminal
Threaded for slip-proof Nikon synch cord. Accepts all standard PC cords.



Film cassette stabilizer

Film pressure plate

Hinged camera back

Film roller

Sprocket wheel

Film takeup spool
Multi-slotted for fast, easy film loading.

Film guide rails
Precision ground and extra long for accurate film travel.

Rewind release button

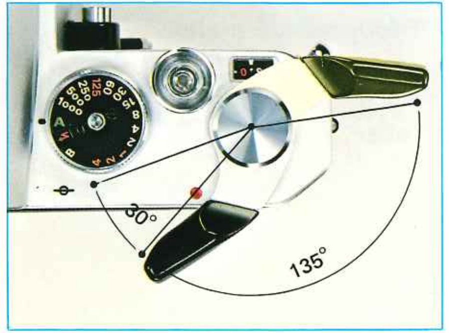
Focal plane shutter
Metal curtains traverse film area vertically in just 7 milliseconds, permitting X-synch to 1/125th second.

Tripod socket

Finder eyepiece

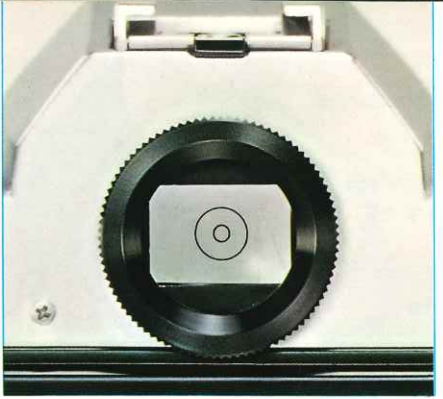
Battery test button and indicator light

Highlights



Multi-function advance lever

A single, short stroke (135°) of the lever advances the film, cocks the shutter, and activates the frame counter. In addition, the exposure meter system is switched on when the lever is brought to the 30° stand-off position, to which it returns when released at the end of the stroke. Pushing the lever back to its flush-over-the-camera position switches the meter off and also locks the shutter release, preventing accidental exposures. The tip of the lever is plastic-cushioned to make it easy on the thumb.



Finder shows everything

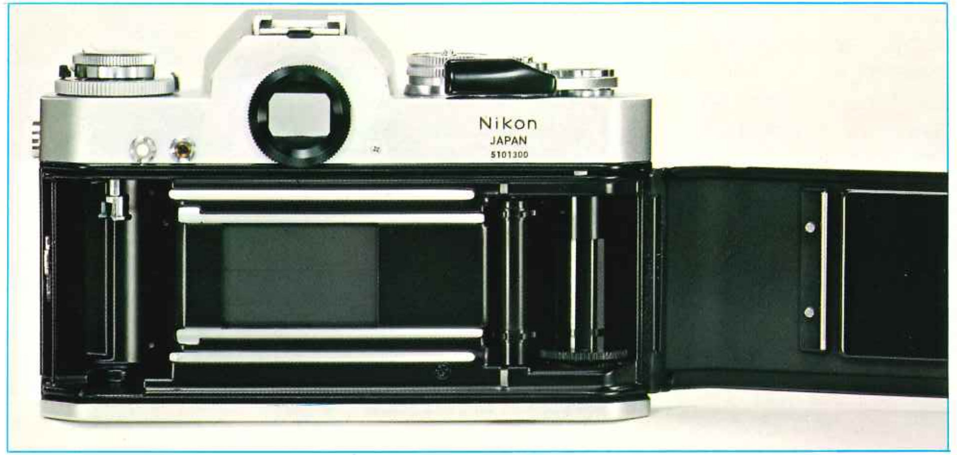
To begin with, you enjoy the error-free accuracy of the Nikkormat thru-the-lens reflex system. You compose every picture with ease and confidence on the spectacularly brilliant finder screen. You focus quickly, positively, using the microprism spot (you can also check the sharpness of the image anywhere on the finder screen). In addition, you see a complete shutter speed scale, with the speed at which you are shooting clearly indicated, and the "weighted" area favored by the EL meter system. You never have to take your eye off the finder and risk losing sight of your subject. The finder eyepiece is threaded to accept such Nikon System accessories as the right angle finder, eyepiece magnifier, diopter correcting lenses, and flash ready-light attachment.

Rewind knob also opens back

To open the Nikkormat EL back, you pull the rewind knob up (after first releasing the safety lock). The back is hinged and remains attached to the camera. The rewind knob has a fold-out crank for convenient, rapid film rewinding.

Larger automatic-return mirror

New design advances make possible the use of an extra-large mirror in the Nikkormat EL. This eliminates the image cutoff in the upper corners of the viewfinder that otherwise may occur with long telephoto lenses. The automatic mirror action, which rises when the shutter release is pressed and returns to viewing position immediately after the exposure, is effectively damped and almost inaudible. The mirror may also be locked in raised position before an exposure.



Film is held truly flat

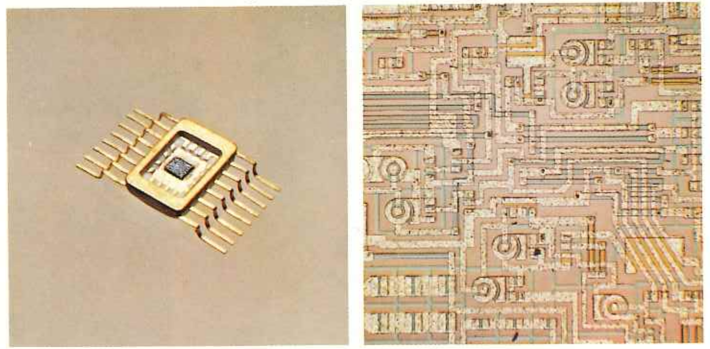
Because film flatness is vital for sharp pictures, the Nikkormat EL design pays special attention to this feature. The film winds onto the takeup spool emulsion-side out, which counteracts its natural curl and flattens it better than emulsion-side-in winding. Further, the large, Nikon F2-type pressure plate, film roller and film cassette stabilizer assure correct film positioning and smooth film movement. Film loading is fast and easy thanks to the multi-slot takeup spool.

The electronically controlled shutter

Using Nikon-developed, solid-state electronics, the Nikkormat EL provides not only completely automatic exposure control but also exceptionally high and constant shutter speed accuracy.
When set on "A", the camera automatically selects the shutter speed that will give you correct exposure at the chosen lens aperture and indicates that speed in the viewfinder. What's more, the automatic system is not limited to the marked speeds but can select any in-between setting that may be called for, from 4 seconds to 1/1000th. You can also shoot at a specific shutter speed whenever you wish and still be sure of perfect exposure by simply aligning the meter needle in the finder.

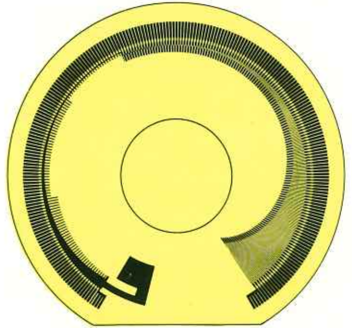
The exceptional speed accuracy produced by the electronic system is especially vital for color photography with its narrow-latitude films. What's more, any given speed is precisely the same every time you set it, without the variations often caused by mechanical linkages. To assure this superior performance, Nikon went so far as to design the electronic components that form the heart of the Nikkormat EL's amazing control sysetm.

Monolithic Integrated Circuit (IC)



Its size is smaller than the head of a match. Yet, it contains some 100 electronic components—74 transistors and 27 resistors—all integrated on a 2 millimeter square baseplate. The monolithic construction of this remarkable IC, developed by Nikon, contributes not only to the compactness of the Nikkormat EL but, more important, to the absolute reliability of its shutter. It eliminates the risk of defective connections between multiple circuits, as used in other systems, permits a faster flow of electric impulses, and helps assure accurate and highly stable shutter performance even under conditions of extreme heat and cold.

Functional Resistance Element (FRE)



Another product of Nikon technology is the Functional Resistance Element which transmits the ASA film speed and lens aperture setting to the electronic circuitry. It consists of an ultra-precise, thin-metal resistor on a hard glass baseplate and provides stability against changes in temperature and humidity. This important component has been made extra durable by the use of precious metals for the connecting taps and tracing brushes.

Silver Oxide Battery

A single 6-Volt battery supplies power not only for the shutter but also for the meter system. The silver oxide type of battery was selected for its efficient performance even under temperature extremes ranging as low as −15°C (5°F) and as high as 55°C (130°F), as well as for its great capacity. Moreover, the current-saving, advanced design of the Nikkormat EL electronic circuitry helps lengthen the life of the battery. Under normal use, it will last a full year. (Even if it is completely exhausted, the shutter can still operate at 1/90th second.)

The battery is housed in the bottom of the mirror box, which helps keep the Nikkormat EL body as compact and slim as possible. It is easily changed after raising the camera mirror. A battery test button and condition indicator is located at the back of the camera.

Flash Synchronization

With its focal plane shutter curtain traversing the film area in just 7 milliseconds, the Nikkormat EL provides synchronization at high shutter speeds for all types of flash. This prevents "ghost" images caused by existing light at slow speeds.

The camera is synchronized for electronic flash at speeds up to 1/125th second and for FP, M and MF type flashbulbs at all speeds from B to 1/1000th second. To set the camera for the type of flash used, simply lift and rotate the synch selector ring surrounding the shutter speed dial until the correct symbol (⚡ for electronic flash, 💡 for bulbs) appears in the window on the dial.

A single synch terminal accommodates all flash units. It is threaded for Nikon screw-in synch cords and also accepts standard PC cords. In addition, the accessory "hot" shoe on top of the camera permits cordless connection with flash units that have matching cordless contacts. The shoe is "live" only when such a flash unit is inserted.

Thru-the-lens exposure control

"CENTER-WEIGHTED" METER SYSTEM

The Nikkormat EL meter system is of unique design, developed by Nikon and considered by experts to be the most reliable for thru-the-lens exposure control.

Placing the meter behind the lens is only the system's first step towards true, automatic exposure accuracy. It observes the brightness of the entire scene recorded on the film but concentrates its sensitivity on the 12mm diameter area outlined in the center of the finder screen where the main subject is usually located. Because of this special design, it is not misled by markedly brighter or darker areas elsewhere in the picture which may cause faulty exposure with other systems. Instead, it assures accurate exposure even for such difficult situations as beach or snow scenes or backlit subjects.

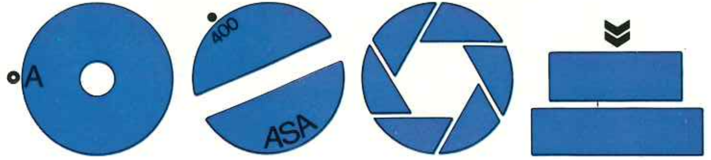
What's more, the system works with Auto-Nikkor lenses at full aperture, so there's no dimming of the bright, clear finder image. It also permits "stop-down" metering. And it is totally reliable regardless of how close or far the subject and whether the camera is held in horizontal or vertical positon.

A further advantage is the unusually wide sensitivity range, from EV 1 to EV 18 (e.g., 1 second at f/1.4 to 1/1000th at f/16 with ASA 100 film and 50mm f/1.4 lens). The meter may be preset for films from ASA 25 to 1600 and couples with lens apertures from f/1.2 to f/32. A complete scale of shutter speeds is visible in the viewfinder, including B and A (automatic); also a green needle, indicating the programmed shutter setting, and a black needle showing the actual speed used. The meter is switched on and off automatically by the normal action of the film advance lever.

AUTOMATIC EXPOSURE CONTROL

With the shutter speed dial set to "A", the Nikkormat EL is a fully automatic precision camera. You simply preset the lens to the desired aperture, focus, compose your picture, and shoot. The camera will deliver a perfectly exposed photograph, automatically, every time.

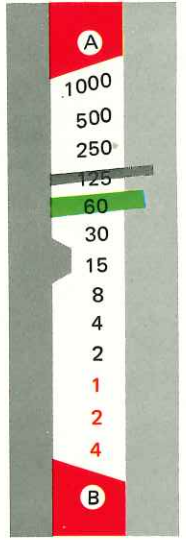
There's no need to take your eye off the finder. You see the green needle pointing to "A" on the scale at the left. When you swing the film advance lever to the 30° stand-off position, switching the meter on, the black needle moves to indicate the shutter



speed at which the exposure will be made. This speed is not limited to the marked settings but may be anywhere between 4 seconds and 1/1000th second because the automatic selection is continuous and stepless. If the meter system determines the correct speed to be, say, 1/295th second, the shutter will operate at that exact speed.

Should the needle indicate a shutter speed that is too slow or too fast for your purpose, you can change it instantly by simply turning the lens aperture ring to a larger or smaller f-stop.

MANUAL EXPOSURE CONTROL



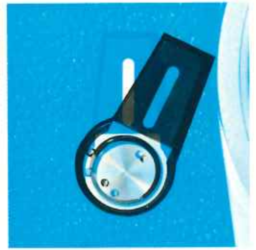
There's no question about the convenience and speed of fully automatic photography. But there will be times when you'll want to determine the shutter setting yourself—whether to "freeze" your subject's motion at a high speed, or deliberately blur it by using a slow speed, to produce other, special effects, or to shoot with flash.

The Nikkormat EL makes it easy, any time you wish. Simply disengage the shutter dial from its locked "A" position and turn it to the desired setting. No need to look at the dial; you see the green indicator in the finder moving to the speed you selected. Next, turn the lens aperture ring until the black needle coincides with the green, and your Nikkormat EL is set for correct exposure at your shutter speed, automatically. It's done with just a twist of your hand, in an instant.
And with manual control, too, the electronic system assures the accuracy of whatever shutter speed you are using.

By offering this exposure versatility, the Nikkormat EL gives you complete freedom to explore new photographic horizons. It makes automation your servant, never your master.

EXPOSURE "MEMORY" LOCK

Under certain, special conditions, you may want to base your exposure on a part of the subject much smaller than the "weighted" metering area, or on one outside that area. With the Nikkormat EL, you can do it easily and still enjoy automatic exposure accuracy.



You simply shift the camera to center the desired area in the finder, or approach your subject until that portion fills the "weighted" area of the finder. Now, when you press the exposure lock lever towards the lens, the meter system automatically "memorizes" the exposure required for that area as long as the lever is held. You can re-compose your picture and press the shutter release, before releasing the lever, with complete assurance that your exposure will be "on the button." This is one of the many, special facilities for creative photography that are yours with the Nikkormat EL.

G. HANNESON

Interchangeable Nikkor lenses

The final test of any camera's performance is the quality of the pictures it gives you. And here, the Nikkormat EL offers the most striking evidence of its superiority because it is designed for use with the world's finest photographic optics—the more than forty Nikkor lenses in the Nikon System. In fact, its electronically-controlled shutter provides automatic exposure accuracy with any and all of these renowned lenses, without any modification whatever, except lenses requiring that the mirror be locked up. The sheer number and variety of Nikkor lenses are without equal in 35mm photography. They range from a 6mm Fisheye Nikkor, whose 220° picture angle actually includes objects behind the camera, to the 2000mm Reflex-Nikkor which magnifies distant objects forty times compared to the normal 50mm lens. Among them are no fewer than eight wide angle lenses, fourteen telephotos, numerous high-speed lenses for successful pictures in dimmest available light, and the widest selection of ingenious special lenses. No matter what picture you have in mind, the Nikon System can provide the lens to make it magnificent reality. Whether your personal system includes one Nikkor lens or a dozen, you can be certain that each is the finest of its type. The world's foremost professionals choose Nikkor optics for their all but incredible sharpness, superb color rendition, and exceptional overall correction. You simply cannot buy an inferior Nikkor because no Nikkor lens is sold unless it conforms to these uncompromising quality standards.

Why Nikkor ?

"Sharpness" or "resolution" are far from the only factors contributing to lens quality. There are at least a dozen other good reasons why anyone who has invested in a Nikkormat EL shouldn't settle for less than a Nikkor lens.

● Unsurpassed Technology

From computerized lens design to sheer brilliant originality, Nikon designers have kept Nikkor lenses in the forefront of optical innovation. For example, Nikon pioneered multi-layer coatings. This technique increases light transmission for greater lens efficiency, it also improves contrast and virtually eliminates flare, and ghost images even in strongly backlit situations. Only recently has anyone else offered multi-layer coatings.

But, unlike others, Nikon uses multi-layer coatings only where necessary for superior lens performance and, in fact, integrates this process into the design of the lens.

● 220 Types of Optical Glass

Nikon is one of the few lens makers in the world who produce their own optical glass. More than 220 varieties, in fact. Nikon designers can count on precisely the glass they need. Only the choicest part of each glass melt is selected.

● The Lens Mount

Nikon cameras and lenses feature a big, rugged bayonet mount which is safe and sure—yet permits twist-of-the-wrist changing. You'll never find a Nikkor lens mount that feels loose or shaky. There are no threads to wear, no add-on adapters to go out of line or loosen when you most need precision and dependability. Mounting lugs are made of stainless steel and phosphor bronze, so your Nikkor lenses always fit like new even after attaching and removing them thousands of times. Manufacturing specifications guarantee that lens-to-film-plane alignment will remain constant.

You can shoot at maximum aperture, with depth-of-field virtually non-existent, knowing that you'll get all the available sharpness. Other lenses, which require adapters, simply cannot match this superior performance.

● Auto-Nikkor Lens Design

On the back of any auto lens is a moving lever or pin whose alignment is vital—the automatic diaphragm actuator. This lets you compose and focus at maximum aperture. With Auto-Nikkors, it's perfectly safe to take the lens off the camera and set it down, because the actuator is protected by a projecting collar.

● Lens Assembly

Externally, lenses may look pretty much alike. You'd have to see a Nikkor being assembled to appreciate the difference. Where, for instance, inner and outer rings are held together by screws, the screw goes through both rings. And the hole is drilled before the lens is assembled, so no metal particles are left inside.

On inexpensive lenses mechanical short-cuts include screws which go through one ring only, holding the second ring with pressure. When the screw loosens, you've got an unsharp lens or, worse yet, a two-piece lens.

● Close Tolerances

A Nikkor and another lens may feel equally smooth and precise when new. With the Nikkor it's because of incredibly precise tolerances—closely spaced and finely grooved helical threading on the focusing mount. The silky action is not affected by extremes of high or low temperatures. And, after years of use, it will still be just as smooth. The automatic diaphragm employs a ball-bearing raceway to achieve the same smoothness and avoid sticking.

Inexpensive lenses get their smoothness by a much simpler method: grease. But, as heat and cold affect the consistency of grease, erratic diaphragm action results. Eventually, grease dries out and can't be replaced, causing the diaphragm to stick. This is particularly important when you consider that an Auto-Nikkor lens must go from wide open to its preselected aperture literally in an instant and as often as five times per second when used on a Nikon with a motor drive.

● Lens Element Placement

Here's where accuracy really counts. Advanced computer design means nothing without meticulous care in seeing that every element or group of elements is precisely where it belongs. Even a tiny misalignment means loss of sharpness. Some lenses use coarse screws, cement, and ordinary friction. One reason you can depend on Nikkor lenses for a lifetime of performance is that threaded retaining rings, backed up by precision-turned screws, anchor every element permanently and precisely in place.

● Lens Handling

A lot of things contribute to fast, precise handling of a lens. Aperture and footage scales must be readable at a glance—even in low available light. Nikkor lenses have white numerals on a black background for high legibility. Depth-of-field scales aren't just a hard-to-read ornament but a real working tool that you can read and use quickly and easily.

With Nikkor lenses, you won't make a mistake and grab the aperture scale when it's the focusing ring you need. The two controls are spaced purposely far enough apart to prevent errors, even under the most difficult conditions. When you grip the knurled surface of the focusing ring, you are in control. And you sense the fine balance that cannot exist unless the camera and lens are made only for each other.

● One Filter Size Fits More Than 20 Nikkor Lenses

All Nikkor lenses from 24 to 200mm (except the 180mm f/2.8 and Medical Nikkor) use the same 52mm screw-in filters and accessories. You never have to guess or experiment. It also keeps your filter cost down. Only Nikkor filters are recommended for use with Nikkor lenses. (See page 38 for details.)

● Nikon Total System Resolution

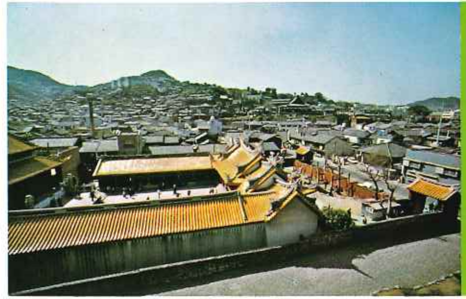
The same care and originality, the same painstaking quality control which go into Nikkor lenses are integral parts of every Nikon and Nikkormat Camera. But a camera is only as good as the lens. And the lens is only as good as the camera. Both are only as good as the perfection with which they are mated. Both are elements of the most complete system in 35mm photography. A comprehensive, unbreakable chain of perfectly matched components that add up to a concept we call Nikon Total System Resolution. The idea that Nikon System components will work together better because they're made to work together. Total System Resolution: it's the one sure way to get the matchlessly great photographs you want.

Different lenses for different effects

Here you see some of the many different effects you can produce with different Nikkor lenses. All photos were made without moving the camera to show how changing the focal length of the lens changes the picture angle and the image size of your main subject.

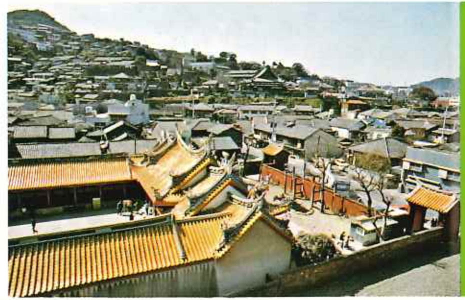
By moving the camera when changing lenses, to keep the image size uniform, you can achieve another variety of effects. Each focal length will give your picture a different perspective, or relationship between foreground and background. Shorter lenses impart a greater feeling of depth, while longer lenses appear to flatten the picture.

With the tremendous variety of Nikkor lenses available for use with the Nikkormat EL, you never need to compromise on the precise pictorial effect you want to produce.



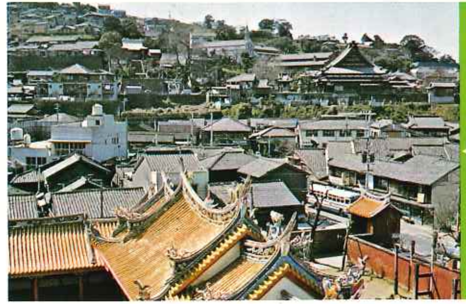
15mm

110°



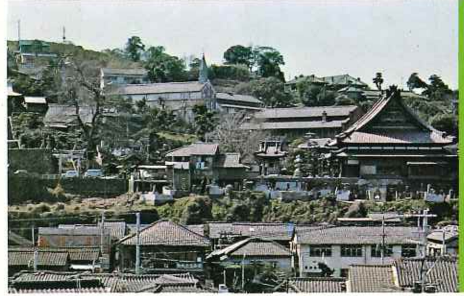
24mm

84°



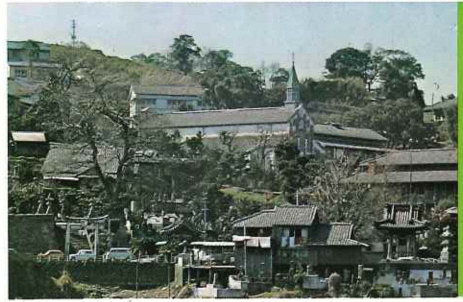
45mm

50°



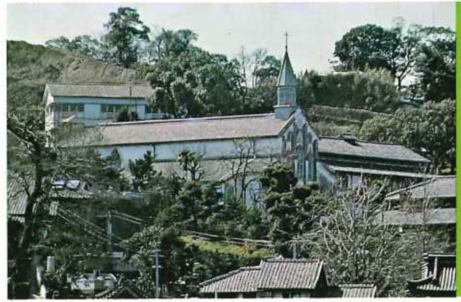
85mm

28°30′



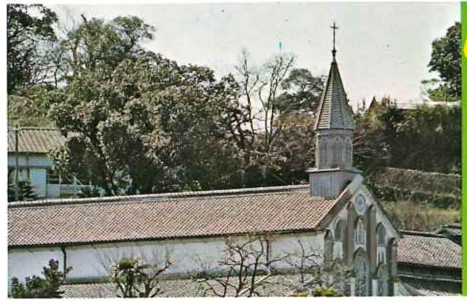
135mm

18°



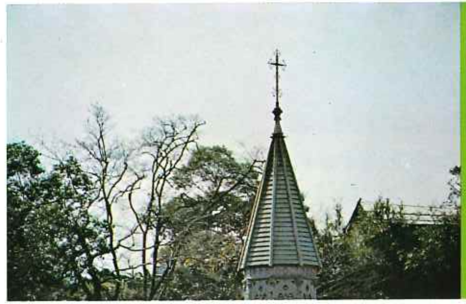
200mm

12°20′



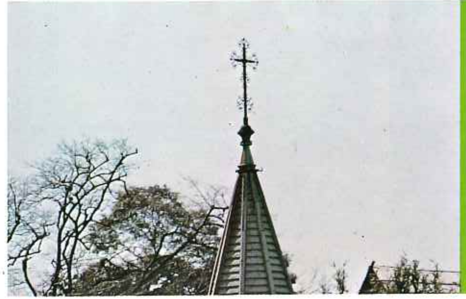
400mm

6°10′



800mm

3°



1200mm

2°

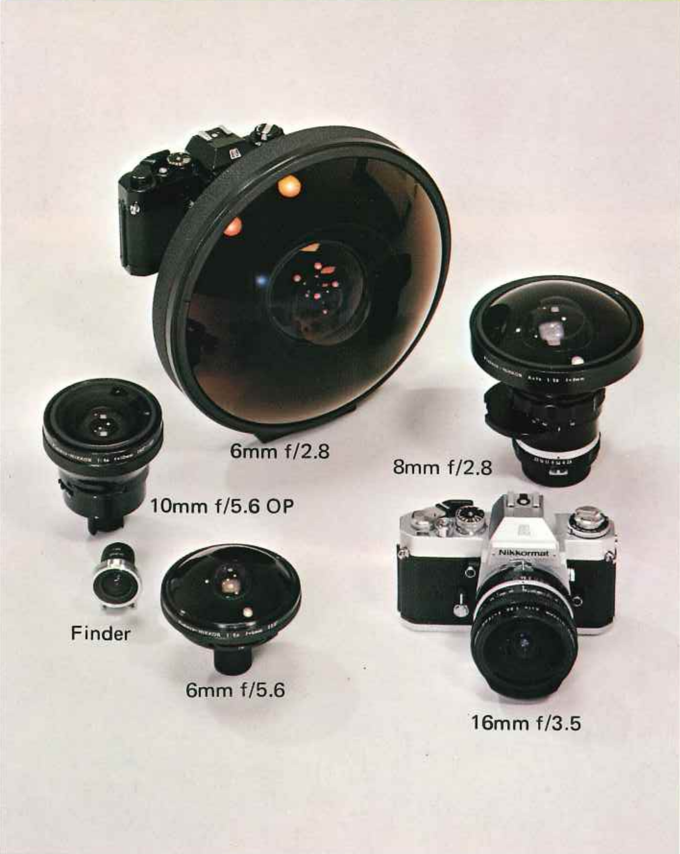
Special Nikkor lenses

A major reason for the undisputed leadership of Nikkor lenses among serious photographers is the spirit of innovation that moves their designers. Time and again, they come up with new optical concepts which they translate into ingenious, special lenses that have broken new ground in such diverse areas as photojournalism, science, industry, and the sheer art of photography.

There are, for example, three lenses for the most critical close-up applications: the superlatively sharp Auto-Micro Nikkor, the unique Medical-Nikkor, and the Bellows-Nikkor. Nikon also was first to offer a perspective-correcting lens for 35mm photography, the PC-Nikkor, and first with a lens providing automatic flash exposure control, the GN Auto Nikkor. Nikkor Zoom lenses are the standard for quality among still camera zoom optics. And, who has not been stopped by the dramatic impact of a Fisheye Nikkor photo (another Nikon first)!

Imagine the kind of photography you can do when you combine this unequalled array of optics with the inherent versatility and automatic convenience of the Nikkormat EL! There is literally no end to it.

Fisheye-Nikkor Lenses



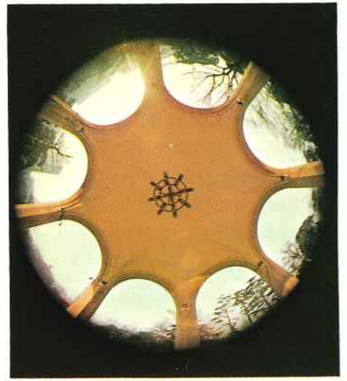
When Nikon introduced the first Fisheye Nikkor, it added new dimensions to the art of photography. These lenses were originally developed for scientific purposes, e.g., meteorological and astronomical studies, where their almost incredibly wide picture coverage of up to 220°, tremendous depth-of-field and outstanding center-to-edge definition have proved to be extremely valuable. They also offer singular advantages for city and regional planning and environment studies. However, today, their applications do not end there. The spectacular pictorial effects produced by Fisheye Nikkors have caught the imagination of creative photographers who use them to add dramatic impact in commercial and advertising photography, photojournalism, and news and sports coverage.

The Nikon System offers five Fisheye Nikkors. Four of them—the automatic 6mm f/2.8 (220°), 6mm f/5.6 (220°), automatic 8mm f/2.8 (180°) and 10mm f/5.6 OP (orthographic projection, 180°)—produce the well-known circular image on the film. The 16mm f/3.5 (170°) fills the entire 35mm film format. Except for the OP Fisheye, all the lenses are of equidistant projection type. All five are equipped with built-in filters, mounted on internal, rotating turrets.

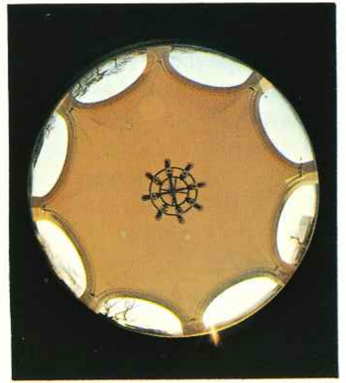
Note: Fisheye Nikkor projection formulas are expressed by the following equations:

Equidistant projection: $Y = c \cdot \theta$
Orthographic projection: $Y = c \cdot \sin\theta$
Y = Image size; θ = Zenith angle; c = Constant

16mm f/3.5 (170°)



Equidistant Projection (180°)



Orthographic Projection (180°)

● 55mm f/3.5 Micro-Nikkor-P Auto

The Micro-Nikkor is remarkable for two reasons.
One, its dual-helical mount permits continuous focusing from infinity to 1:2 (one-half life size) reproduction. This range is further extended from 1:2 to 1:1 (life size) reproduction by the use of the M2 ring, supplied with the lens. Its automatic diaphragm remains operative throughout the entire focusing range.
Two, the lens exhibits truly outstanding resolving power that remains virtually constant at all distance settings. As a result, it is ideally suited not only for close-up and macro shots of insects, flowers and other small objects and for copying documents, drawings, stamps, etc., but also for general photography wherever critical definition is paramount.

● 200mm f/5.6 Medical-Nikkor Auto

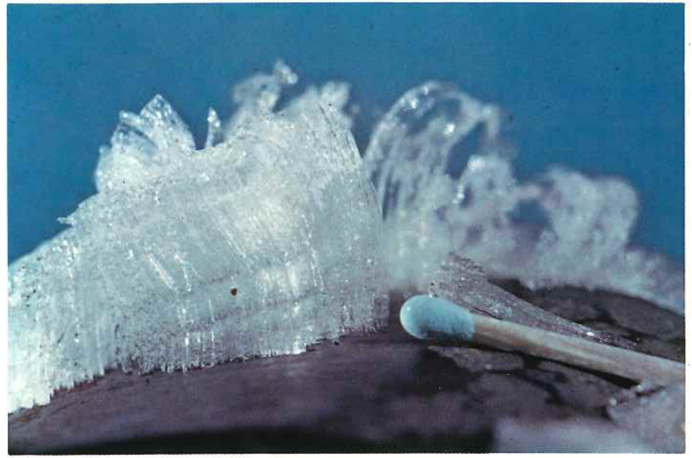
This versatile lens is actually a complete, self-contained close-up system. Originally designed for medical and dental photography, the Medical-Nikkor is also finding widespread application in industrial and commercial close-up work, particularly in cases where the photographer cannot get too close to his subject. It offers 11 reproduction ratio settings from 1:15 to 3:1 in combination with six auxiliary lenses supplied with it. An electronic ring light is built into the front of the lens providing even, shadowless illumination and adjustable for full or 1/4 light output.
The lens also contains four modeling lamps to aid in focusing and composition.
The automatic diaphragm is adjusted to the correct f-stop simply by setting the ASA speed and the desired reproduction ratio. The frame number or magnification ratio can be imprinted on the corner of the picture if desired.

● 35mm f/2.8 PC-Nikkor

F. HIDALGO

The PC-Nikkor incorporates shifting movements of the lens and permits photographing of massive subjects, e.g., tall buildings, without tilting or inclining the camera which causes unwanted convergence of parallel lines. This makes the lens valuable for architectural, industrial and commercial photography, especially where perspective correction in enlarging the negative is impractical. The rotating lens mount makes it possible to apply the shift in any direction, from horizontal to vertical. Another application for the PC-Nikkor is for producing panoramic pictures by joining two exposures. By shifting the front part of the lens and not the entire camera, as necessary when a conventional lens and a panorama head are used, the photographer is able to keep the film plane parallel to the subject so that the two frames match perfectly at the center and uniform perspective is maintained.

● 105mm f/4 Bellows-Nikkor



Excellent close-up results can be obtained with this lens, designed specifically for use with the bellows focusing attachments. It provides continuous focusing from infinity to 1:1.3 with the PB-4 or PB-5 bellows. The preset diaphragm may be stopped down to f32 in accurate 1/3 stop increments. Its long focal length affords ample working distance for subject illumination and natural perspective.

●45mm f/2.8 GN Auto Nikkor

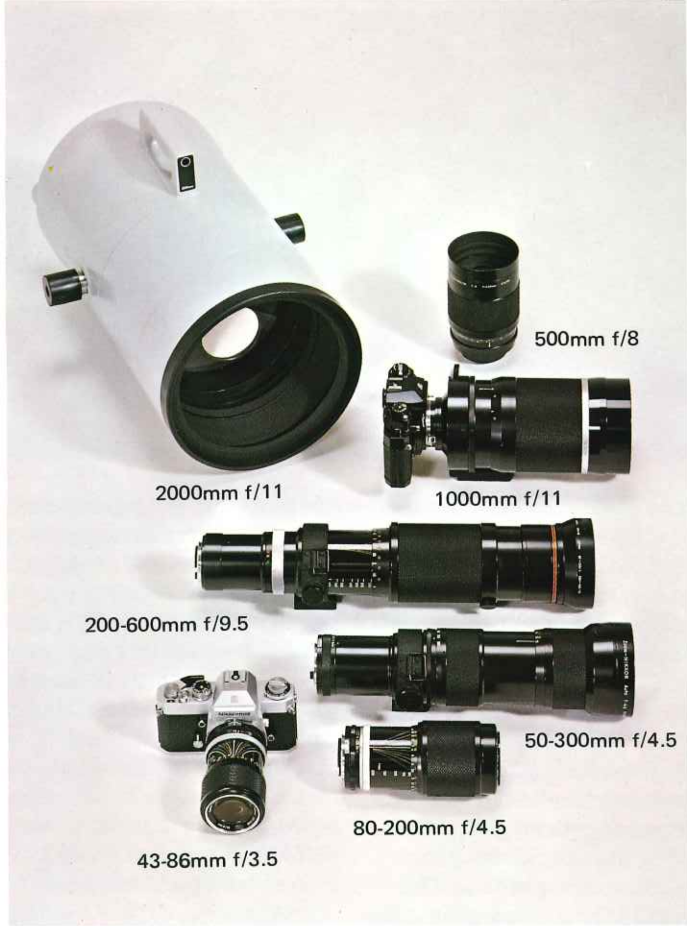
The GN Nikkor has a special scale on which the flash guide number of the film in use can be preset. This simple adjustment activates a precision linking system that couples the focusing mechanism to the lens diaphragm. The diaphragm is then adjusted automatically as the lens is focused, assuring correct flash exposure at all subject distances.

Reflex-Nikkor Lenses

The Reflex-Nikkors are of catadioptric (mirror-reflex) design, based on the principle of large, astronomical telescopes. In conventional lenses, the light follows a single, one-directional path. In mirror-reflex lenses, such as the Reflex-Nikkors, the incoming light is doubled back, traveling the same distance in less space. This use of front surface optically perfect mirrors results in lenses that are remarkably compact and lightweight in relation to their focal lengths. It is actually possible to use them for hand-held action photography at high shutter speeds.

Mirror-reflex lenses have no diaphragms. Light transmission normally is controlled by means of built-in filters. The Nikkormat EL shutter, with its continuously variable speeds, is the ideal means for accurate exposure control with these single-aperture lenses.

Reflex-Nikkors are used extensively in science, sports and news coverage, wildlife photography and architecture. There are three Reflex-Nikkor lenses: the 500mm Reflex-Nikkor, weighing about 1kg (2.2 lbs.), the 1000mm lens, weighing about 1.9kg (4.2 lbs.), and the 2000mm lens weighing some 17.5kg (38.5 lbs.).



Zoom-Nikkor Auto Lenses

A Zoom Nikkor offers the advantages of lens interchangeability without actually changing lenses. You can vary its focal length to select the most effective image size and picture angle with a twist of your hand. Also, you can produce singularly striking effects by zooming the lens with the camera shutter set to a slow speed.

Nikon precision is evident in the outstanding performance of these versatile lenses. They are the sharpest still camera zoom optics available; sharper, in fact, than many single-focal-length lenses. Once focused, a Zoom Nikkor stays in sharp focus throughout its zoom range while also maintaining the precise exposure value of the selected aperture.

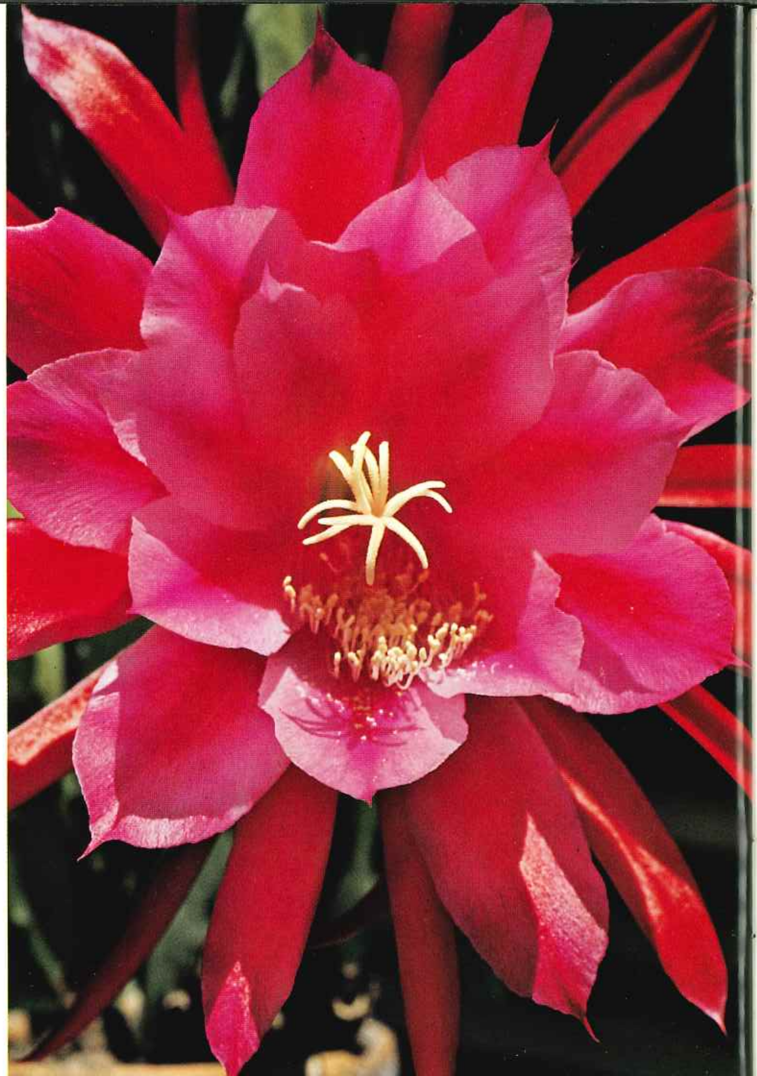
In all, there are four Zoom Nikkors, covering a total focal length range from 43 to 600mm. The ultra-compact 43-86mm f/3.5 with its range from medium wide angle to short telephoto is ideal for travel. The 50-300mm f/4.5 is a favorite among professionals for its 6X zoom span. Another unusually compact lens is the 80-200mm f/4.5, which is also famous for its truly exceptional resolving power. Longest of the Nikkor Zooms is the 200-600mm f/9.5, an ideal lens for long-range sports, wildlife and bird photography.

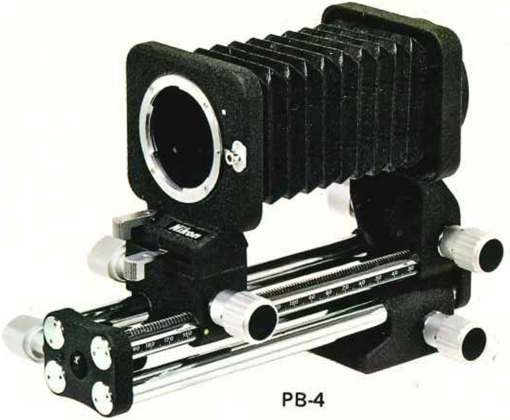
F. HIDALGO

Close-up Photography

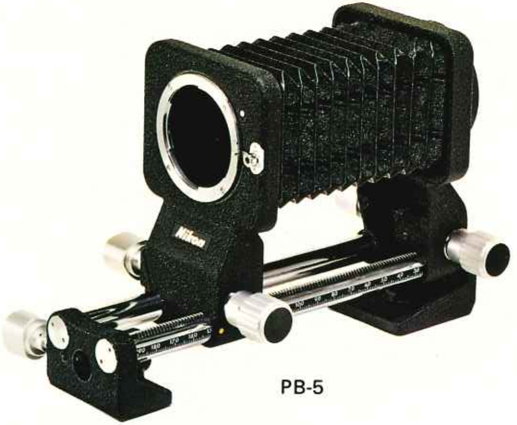
In this both fascinating and demanding area, the Nikkormat EL user enjoys several major advantages. Perhaps the most striking of these is the way this camera reduces the problem of getting correct close-up exposure to automatic simplicity and certainty. When using a bellows unit or extension tube, you simply preset the desired lens aperture, and the electronically-controlled shutter provides the correct exposure, automatically, regardless of the lens and accessories used. The shutter speed range down to a full 4 seconds is of special value where extralong exposures are needed to compensate for long bellows extension or to assure greatest depth-of-field. And, with the continuous shutter speed adjustment, you are always certain that the automatic system will select precisely the correct speed called for by the picture situation.

As a member of the Nikon System, the Nikkormat EL can draw upon the widest array of close-up and macro accessories in 35mm photography. Whatever the application—scientific, medical, industrial or educational—you are always sure the equipment you need is available within this all-encompassing system. What's more, each and everyone of these accessories is designed for use with the Nikkormat EL and engineered to Nikon standards of precision. In an area where equipment quality is so critically important, you won't want to settle for less.





PB-4



PB-5

Close-up Equipment

Mounted between camera body and lens, bellows attachments provide continuous focus over a wide range of magnification ratios. The two models in the Nikon System may be used with virtually any Nikkor lens.

BELLOWS FOCUSING ATTACHMENT PB-4

The PB-4 with its unique, special facilities is the most versatile of all close-up accessories. Its front lens standard can be swung and shifted to correct linear distortion and manipulate depth-of-field. The dual twin-track construction makes it possible to move the entire camera-bellows-lens assembly as a unit for fine focusing without disturbing the lens-to-film distance. The camera may be attached or detached and turned to vertical or horizontal position at any point along the track.

Reproduction ratios extend from 1:1.2 to 1:3.6 with 50mm f/2 lens in normal position, from 1:1.6 to 1:4.4 with lens reversed (using the BR-2 ring). The PB-4 accepts both slide copying attachments in the Nikon System for convenient duplicating of 35mm film. Weight: 1200g (42.3 oz.).

BELLOWS FOCUSING ATTACHMENT PB-5

This is a simplified version of the PB-4, with one twin-track and minus the front standard movements. It offers the same range of magnifications, accepts the same lenses and both slide copying attachments. Weight: 840g (29.6 oz.).

SLIDE COPYING ATTACHMENT PS-4

Used in conjunction with the PB-4 or PB-5 Bellows Attachment, the PS-4 enables you not only to duplicate 35mm mounted slides and filmstrips but also to improve upon the originals. The frame holding the original can be shifted to permit cropping for a section of the slide which is enlarged in copying to fill the full 35mm format. When not in use, the bellows of the PS-4 fold flat for easy, safe storage. Attached trays hold filmstrips in place.

SLIDE COPYING ATTACHMENT PS-5

Except for the absence of the filmstrip trays and frame shifting feature, the PS-5 is identical to the PS-4. It may be used with both bellows focusing attachments.

BR-2 LENS REVERSING RING

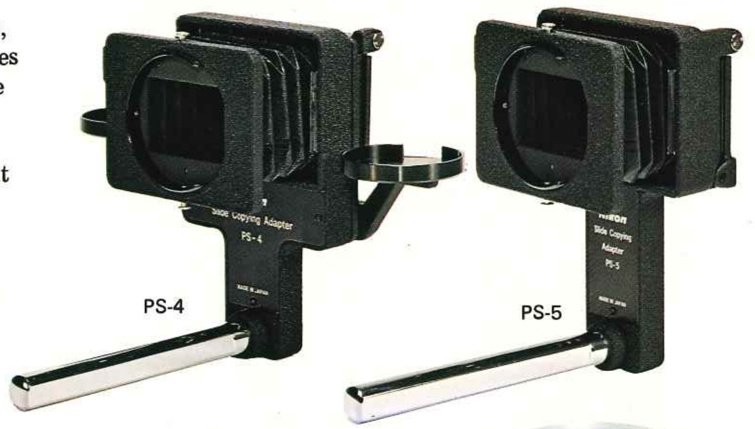
With this ring, Nikkor lenses with 52mm front thread can be attached to a bellows focusing unit in reverse position. Mounting a lens in reverse results in improved optical performance at greater than 1:1 reproduction.

BR-3 ADAPTER RING

The BR-3 ring is attached to the back of a reversed lens to provide the 52mm thread so that the lens can accept a slide copying adapter, filter, or other accessories. It also serves as a lens hood and as protection for the exposed rear lens element.

EXTENSION RING E2

Designed for use with Nikkor lenses from 20mm up, the E2 ring is placed between camera body and lens to extend the lens-to-film distance by 14mm. It has a built-in plunger which, when depressed, opens an attached Auto-Nikkor lens to full aperture for easy viewing and focusing (it may also be operated with a Nikon cable release).



PS-4

PS-5

BR-2 Lens Reversing Ring

Extension Ring Set K

BR-3 Adapter Ring

Extension Ring E2

EXTENSION RING SET K

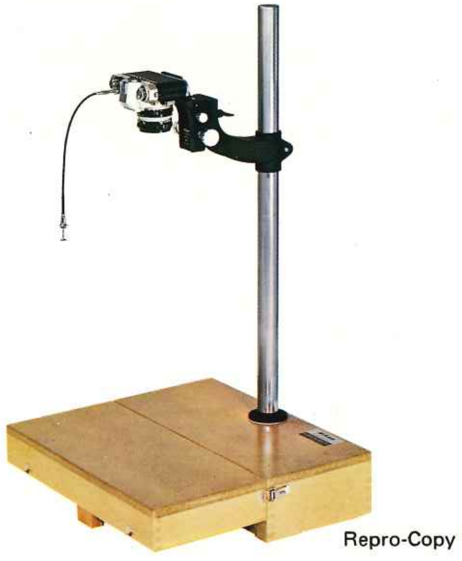
This set consists of five rings, inserted individually or in various combinations between camera body and lens for extensions from 5mm to 46.6mm. It accepts Nikkor lenses from 20mm to 300mm. Magnification with the 50mm f/2 lens ranges from 1:8.9 to 1:1.

AUXILIARY CLOSE-UP LENSES

Simplest and most economical of all close-up aids, these lenses are of finest optical quality and precisely parcentric to assure distortion-free reproduction. They fit virtually all Nikkor lenses with 52mm front thread, do not affect automatic diaphragm operation, and require no exposure compensation. Available in three diopter powers, for use individually or in combination for added magnification.

LENSES FOR CLOSE-UP PHOTOGRAPHY

Most Nikkor lenses can be used with one or more of the various close-up accessories. The 50mm f/2 is particularly versatile in this respect. Where high resolving power is paramount, the 55mm f/3.5 Micro Nikkor-P Auto meets the most exacting requirements, whether used by itself for its inherent close-up facilities or combined with other attachments. The 105mm f/4 Bellows-Nikkor is not only exceedingly sharp but can be focused from close-up range to infinity when mounted on the PB-4 or PB-5 bellows unit. There is also the unique 200mm Medical-Nikkor Auto—a complete, self-contained close-up system with built-in electronic ring-light flash. Both the Bellows-Nikkor and Medical-Nikkor offer the added advantage of comfortably long working distances.



Repro-Copy Outfit Model PFC-2

REPRO-COPY OUTFIT MODEL PF-2

The Repro-Copy Outfit and the Nikon F2 camera together form an integrated close-up system for reproducing flat copy or photographing small objects. Model PFC-2 consists of a wooden case which unfolds to serve as a base, an upright column and a sliding arm equipped with a camera cradle. The camera cradle may be locked at 90° or 45°.
Model PFB-2 is the same as the PFC-2 except that it has a conventional baseboard instead of the wooden case. Model PFT-2 includes a table clamp instead.

Close-up Magnification Ranges

Lens	Close-up Accessories	Lens Mounting	Magnification Range	
50mm f/2	Lens alone	Normal		1/9.6X–∞
	Close-up Attachments	Normal	No. 0	1/7.1X–1/27X
			No. 1	1/5.6X–1/13X
			No. 2	1/3.9X–1/6.6X
			Nos. 1 & 2	1/3.0X–1/4.4X
	Extension Ring E2	Normal		1/2.7X–1/3.7X
	Extension Ring Set K	Normal		1X–1/1.9X, 1/2X–1/3.1X, 1/3.2X–1/8.9X
	Bellows PB–4, PB–5	Normal		1/1.2X–3.6X
		Reversed		1.6X–4.4X
105mm f/4 Bellows	Bellows PB–4, PB–5	Normal		1.3X–∞
55mm f/3.5 Micro	Lens alone	Normal		1/2X–∞
	With M2 Ring	Normal		1X–1/2X
	Bellows PB–4, PB–5	Normal		3.4X–1/1.3X
		Reversed		4.3X–1/1.7X
200mm f/5.6 Medical	With or without 6 auxiliary lenses	Normal		3X, 2X, 1.5X, 1X, 2/3X, 1/2X, 1/3X, 1/4X, 1/6X, 1/8X & 1/15X

Cases

Nikon compartment cases offer ample, safe storage capacity with separate compartments for camera bodies, lenses, etc. Inside and outside pockets hold various smaller accessories. The cases are luxuriously finished and provide best possible protection for the finest equipment. Each comes with shoulder strap and non-slip shoulder pad. There are many other cases for cameras, lenses and accessories.

COMPARTMENT CASE FB-8

Made of fine leatherette, this case holds a camera mounted with a normal lens plus a camera body. Also accommodates three additional lenses up to 300mm.
A roomy outside pocket can store small accessories.
Dimensions: 32 x 21 x 21cm (13-1/8 x 8-3/8 x 8-3/8 in).
Color: Black.

COMPARTMENT CASE FB-11A

Large-sized cowhide case can accommodate two Nikon cameras mounted with any lens from 16mm to 180mm plus one or two lenses from 16mm to 400mm in the upper compartment; and four or five lenses from 16mm to 500mm in the lower compartment. 4 partitions can be removed or rearranged for other combinations of large-sized instruments or accessories. Comes with cushion pad, filter case and handy shoulder strap. Dimensions: 38 x 30 x 22cm (15-1/16 x 11-13/16 x 8-5/8 in). Color: Brown.

CH-3

FB-8

FB-11A

FB-12

FB-14

COMPARTMENT CASE FB-12

In this cowhide case, the upper compartment accommodates two cameras mounted with 135mm lens and 55mm lens, or one camera mounted with 300mm lens, or one camera with 135mm lens plus one 500mm lens. The lower compartment houses a 400mm lens or three to four shorter lenses. Flexible storage combinations thanks to 3 removable and rearrangeable partitions. Comes with cushion pad, filter case and handy shoulder strap. Dimensions: 33 x 23 x 19cm (13 x 9 x 7-5/8 in). Color: Brown.

COMPARTMENT CASE FB-14

Lightweight cowhide case ideal for carrying lenses, camera and accessories for long periods. Interior is lined with soft, resilient cloth, and 3 partitions with adjustable fasteners can be removed and rearranged. Accommodates one camera with 50mm lens attached and two lenses: 200mm and 300mm lenses.
A roomy outside pocket for small items.
Dimensions: 29 x 25 x 16cm (11-1/2 x 10 x 6-1/2 in).
Color: Black.

CAMERA-LENS CASES

There are two zippered cases—one for the camera with 50-300mm Nikkor Zoom and the other for the camera with 200-600mm Nikkor Zoom.

RIGID LENS CASES

These come in 13 different sizes, made of brown leather or black leatherette, and lined with velveteen for maximum protection. Cases for large lenses are supplied with shoulder straps for carrying convenience.

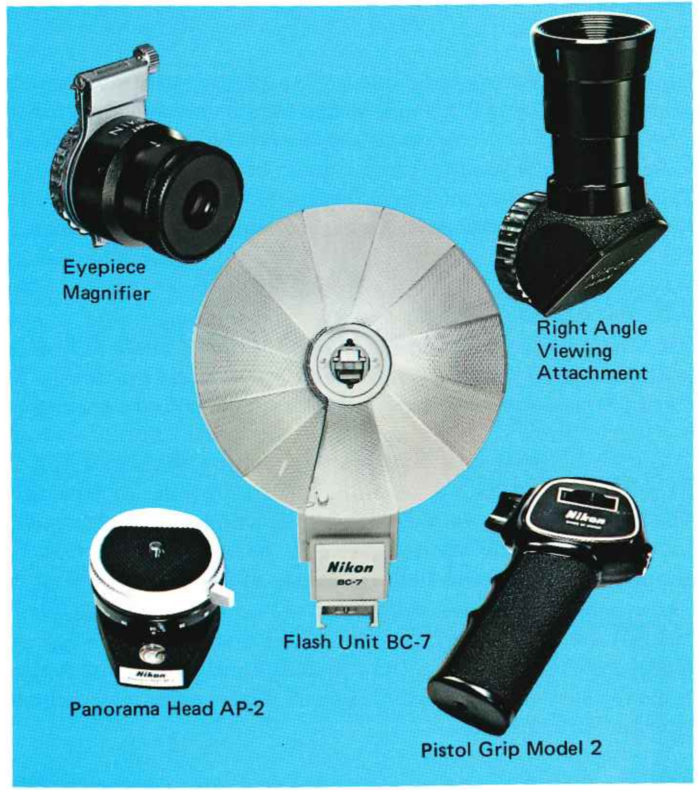
PLASTIC CASES

The bayonet mount on the black plastic base holds the lens, with transparent plastic cover screwed onto the lens for protection. Supplied in two sizes to fit a wide range of Nikkor lenses.

FLEXIBLE POUCHES

Made of soft leatherette with drawstring closures, the pouches come in three models—Nos. 51, 52, 53—to accommodate Nikkor lenses of different sizes.

Other Accessories



Pistol Grip Model 2

The pistol grip provides support for hand-held shots using the Nikkormat EL with a large lens such as a telephoto or a zoom lens attached. It is screwed into the tripod socket under the camera or lens. A connecting cable release couples the grip trigger to the camera shutter release.

Panorama Head AP-2

Mounted between camera and tripod, the panorama head accurately spaces a series of photographs that can be joined as a single panorama picture up to 360°. It has markings for 28mm, 35mm, 50mm, 85mm and 105mm lenses and can be used with 20mm and 24mm lenses as well. A built-in bubble level simplifies accurate horizontal alignment.

Flash Unit BC-7

This flash unit is attached to the Nikkormat EL accessory shoe by means of an adapter and without any connecting cord. It has a fan-like reflector that can be tilted up to form an arc of 120° for bounce flash, and accepts three different types of flashbulbs—bayonet, miniature or AG-1. A terminal is provided for off-camera flash. Exposure calculator is built in. A 15V laminated battery powers the unit.

Eyepiece Magnifier

Screws into the finder eyepiece and magnifies the central finder image area 2X for critical focusing. Has built-in diopter correction. May be swung out of the way for normal viewing and focusing.

Right Angle Viewing Attachment

Fits onto the finder eyepiece and rotates for viewing from above, below or other angles. Adjusts for wide range of diopter corrections.

Eyepiece Correction Lenses

Available in various powers from minus 5 to plus 3 diopters to adjust the finder system for individual eyesight.

Optical Glass Filters

Optical quality is as important in filters as it is in the camera lens. An inferior filter will prevent even the finest lens from performing at its best. That is why the use of Nikon filters exclusively pays off in superior picture quality. Nikon filters are made of the finest optical glass, precision ground, polished to plano-parallel flatness and mounted strain free, each filter is free from striae, stress or other flaws that might cause poor image quality. Front and back surfaces are hard-coated to prevent surface reflections. The Nikon System offers an exceptionally wide variety of these high quality filters.

Effects of Nikon Filters

Skylight	For color films. Reduces bluish cast in open shade and on overcast days.
Ultra-violet	For color and b & w films. Absorbs ultra-violet and cuts through haze.
Yellow	For b & w film. Absorbs ultra-violet, violet and blue light waves to darken the sky in landscape photography.
Orange	For b & w film. Absorbs wider range of light than the yellow filters.
Green	For b & w film. Absorbs ultra-violet, violet, blue and red. Subdues blue and red, brightens and emphasizes green tones. Also makes skin tones ruddier, aiding in men's portraiture.
Polarizing	For color and b & w films. Eliminates reflections from non-metallic surface, darkens sky in color shots.
Neutral Density	For color and b & w films. Subdues light of all colors uniformly. Helpful for shooting in extremely bright light or for reducing depth-of-field using larger lens aperture.
Amber	For color film. Removes blue tinge that results from using daylight film in the shade, cloudy weather or indoors. Gives natural color rendition when using tungsten type film in daylight.
Blue	For color film. Removes red-yellow hue that results from using daylight film in twilight. Eliminates excessive red-yellow caused when daylight type film is used with clear flashbulbs or reflector lamps.

TYPE			SCREW-IN				DROP-IN
SIZE			52mm	72mm	95mm	122mm	Series 9
Filter		Lens used	24/2.8, 28/2, 28/3.5, 35/1.4, 35/2, 35/2.8, 35/2.8PC, 45/2.8GN, 50/1.4, 50/2, 55/1.2, 55/3.5 Micro, 85/1.8, 105/2.5, 135/2.8, 135/3.5, 105/4 Bellows, 200/4, 43-86 & 80-200 Zoom	20/3.5, 180/2.8, 300/4.5, 400/5.6	50-300 Zoom	400/4.5, 600/5.6, 800/8, 1200/11	200-600 Zoom
Skylight		L1A	●	●			
		L1B	●	●			
Ultra-violet		L37	●				
		L39	●	●	●	●	●
Yellow	Light	Y44	●				●
	Medium	Y48	●	●	●	●	●
	Deep	Y52	●				●
Orange		O56	●	●	●	●	●
Red		R60	●	●	●	●	●
Green	Light	X0	●				
	Deep	X1	●				
Polarizing		Polar	●	●			
Neutral Density		ND 4X	●				
		ND 8X	●				
Amber	Light	A2	●				
	Deep	A12	●				
Blue	Light	B2	●				
	Medium	B8	●				
	Deep	B12	●				

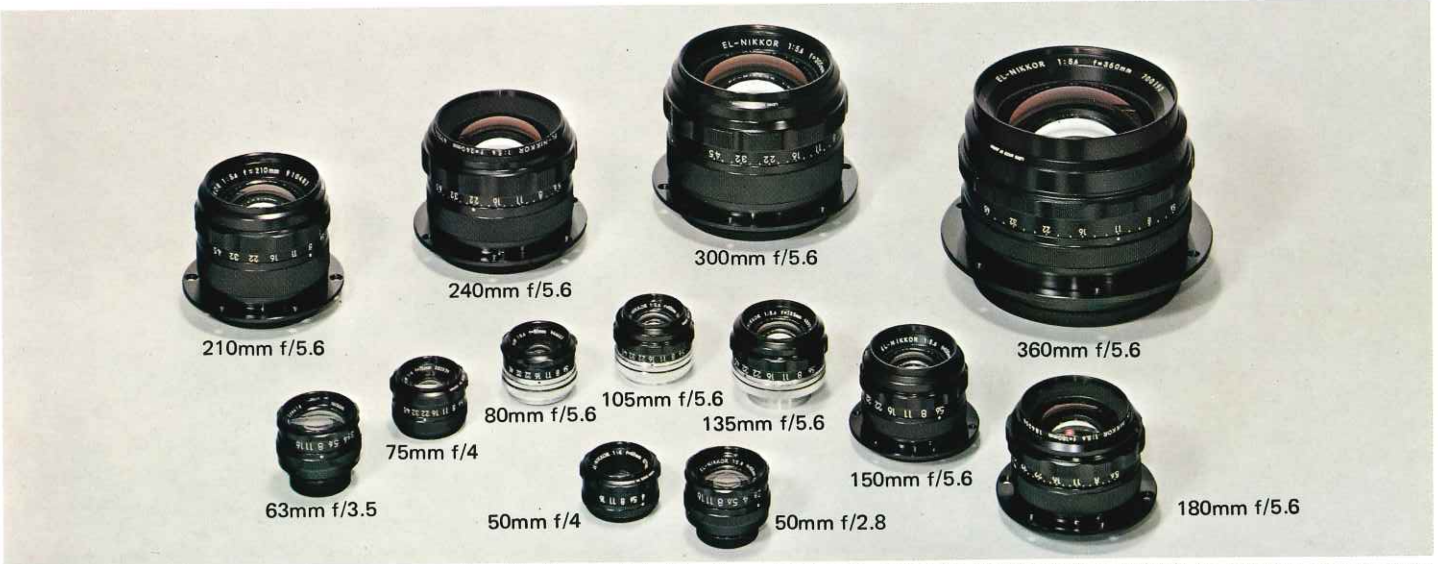
●— *Available*

El-Nikkor Lenses

No matter how perfect a negative, it will not yield a truly fine enlargement unless a high quality enlarging lens is used. Camera lenses are not suitable, mainly because they do not perform as well at the short distances involved.

El-Nikkor lenses, on the other hand, are designed specifically for this purpose. Using special Nikon optical glass, they are corrected not only for the visible spectrum but also for the shorter, invisible wavelengths to which photographic paper is most sensitive. They provide perfect conformity between visual and actual focusing of the projected image which, together with their exceptional resolving power, results in sharpest possible prints with any negative. Furthermore, there is no focus shift as El-Nikkors are stopped down for the exposure. And, their excellent flatness of field assures optimum sharpness to the very edges of the print. As to color rendition, El-Nikkors are used for some of the most critical color reproduction in the graphic arts.

Large, clearly legible aperture markings and click-stop settings make it easy to adjust El-Nikkors under darkroom conditions. They are fitted in precision mounts with standard threading and available in focal lengths to cover all popular negative sizes.



• Specifications and designs shown herein are subject to change when warranted by further improvements.

RCVD - 1-15-'76

NIKON INC.
Garden City, New York 11530: Subsidiary of Ehrenreich Photo-Optical Industries, Inc.
Code No. 8030-03 PUC ________________ Printed in Japan

The Nikkormat EL